



# Operational Noise Emission Assessment

## Proposed Pickleball Courts

### Pittwater RSL, Mona Vale, NSW



Client:  
**Pittwater RSL**  
C/o- Paynter Dixon  
Constructions Pty Ltd

11 April 2024


Client	Pittwater RSL
C/o-	Paynter Dixon Constructions Pty Ltd
Contact	Mr Robert Clarke
Address	5 Rider Boulevard RHODES NSW 2138
Phone	02 9797 5507
Email	robert.clarke@paynterdixon.com.au

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## GLOSSARY

### NOISE

Noise is produced through rapid variations in air pressure at audible frequencies (20 Hz – 20 kHz). Most noise sources vary with time. The measurement of a variable noise source requires the ability to describe the sound over a particular duration of time. A series of industry standard statistical descriptors have been developed to describe variable noise, as outlined below.

### NOISE DESCRIPTORS

**L<sub>eq</sub>** – The sound pressure level averaged over the measurement period. It can be considered as the equivalent continuous steady-state sound pressure level, which would have the same total acoustic energy as the real fluctuating noise over the same time period.

**L<sub>Aeq(15min)</sub>** – The A-weighted average equivalent sound level over a 15-minute period.

**L<sub>A10</sub>** – The A-weighted noise level that has been exceeded for 10% of the measurement duration.

**L<sub>A90</sub>** – The A-weighted noise level that has been exceeded for 90% of the measurement duration. This descriptor is used to describe the background noise level.

**RBL** – Rating Background Level. The overall, single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period (as opposed to over each 24-hour period used for assessment background level). This is the level used for assessment purposes.

**dB** – Decibels. The fundamental unit of sound, a Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell. Probably the most common usage of the Decibel in reference to sound loudness is dB sound pressure level (SPL), referenced to the nominal threshold of human hearing. For sound in air and other gases, dB (SPL) is relative to 20 micropascals ( $\mu\text{Pa}$ ) =  $2 \times 10^{-5}$  Pa, the quietest sound a human can hear.

**R<sub>w</sub>** – Weighted Sound Reduction Index. A measure of sound insulation performance of a building element. The higher the number, the better the insulation performance.

### A-WEIGHTING

"A-weighting" refers to a prescribed amplitude versus frequency curve used to "weight" noise measurements to represent the frequency response of the human ear. Simply, the human ear is less sensitive to noise at some frequencies and more sensitive to noise at other frequencies. A-weighting is a method to present a measurement or calculation result with a number representing how humans subjectively hear different frequencies at different levels.

### NOISE CHARACTER, NOISE LEVEL AND ANNOYANCE

The perception of a given sound to be deemed annoying or acceptable is greatly influenced by the character of the sound and how it contrasts with the character of the background noise. A noise source may be measured to have only a marginal difference to the background noise level but may be perceived as annoying due to the character of the noise. Acoustic Dynamics' analysis of noise considers both the noise level and sound character in the assessment of annoyance and impact on amenity.

## 1 INTRODUCTION

### 1.1 EXECUTIVE SUMMARY

Acoustic Dynamics is engaged by **Paynter Dixon Constructions** on behalf of **Pittwater RSL** to conduct an acoustic assessment of operational noise emission associated with the proposed pickleball courts at the existing Pittwater RSL at 80-82 Mona Vale Road, Mona Vale, NSW.

This assessment is prepared in accordance with the various acoustic requirements of:

- (a) Northern Beaches Council;
- (b) Liquor and Gaming NSW;
- (c) NSW Environment Protection Authority;
- (d) Association of Australasian Acoustical Consultants; and
- (e) Australian Standards.

### 1.2 PROJECT DESCRIPTION

The subject site is located at 80-82 Mona Vale Road, Mona Vale in the Northern Beaches Council area of NSW. The site currently operates as a commercial operation (RSL venue) and following the COVID-19 restricted internal patron capacities, sought approval to utilise the carpark deck area for the purpose of temporary outdoor dining. Approval was granted by Council via Development Application No. 2021/1724.

The premises then sought approval to modify the DA, to allow for the permanent use of the outdoor dining area. Approval was granted by Council via Development Application No. 2022/1542.

The proposal is now seeking approval for six pickleball courts on the upper level of the car park for matches at the following times (excluding Christmas):

- Monday to Sunday: 8:00am to 9:00pm.

Acoustic Dynamics understands there will be four (4) players per court and up to an extra three (3) players on the sidelines.

Acoustic Dynamics advises the operations of the premises and noise emission levels are predicted to remain as existing during all other operating hours.

The project site, adjacent receivers and surrounding area are shown in the Location Map and Aerial Image presented within **Appendix A**.

## 1.3 SCOPE OF WORKS

Acoustic Dynamics has been engaged to provide an acoustic assessment suitable for submission to the relevant authorities as part of a Development Application.

The scope of the assessment is to include the following:

- Review local planning and development control instruments, state guidelines, federal legislation, standards and guidelines applicable to the proposal;
- Rely on operator-attended measurements previously undertaken at the development site to determine the existing noise environment and establish relevant noise criteria;
- Conduct operator-attended measurements at an appropriate leisure centre during pickleball classes and matches to determine the level of noise likely to result from the operation of the proposed pickleball courts;
- Perform relevant calculations and noise modelling associated with the proposal to determine noise emission at nearby receiver locations; and
- Provide recommendations for design measures to be incorporated to achieve compliance with the relevant criteria and minimise potential noise impacts at nearby receiver locations.

## 2 ASSESSMENT CRITERIA AND STANDARDS

Acoustic Dynamics has reviewed local planning and development control instruments, government policies and legislation, standards and guidelines that are applicable to the proposal. The relevant sections of this review and the most stringent criteria applicable to this assessment are presented below.

### 2.1 LOCAL GOVERNMENT AND COUNCIL CRITERIA

#### 2.1.1 DEVELOPMENT CONSENT

The following relevant acoustic information is contained within development application 2021/1724:

##### ***“DEVELOPMENT CONSENT OPERATIONAL CONDITIONS***

##### **5. Noise Controls**

*Section 5 “Recommendations & Advice” made in the acoustic report prepared by Acoustic Logic dated 17 September 2021 (Reference 5360R001.LB.210917) must be implemented in order to achieve compliance with noise amenity criteria.*

*Reason: To maintain acoustic amenity of the surrounding area.*

## 2.2 STATE GOVERNMENT POLICIES AND LEGISLATION

Acoustic Dynamics has conducted a review of the relevant state environmental planning policies, legislative acts and statutory instruments, including the *Protection of the Environment Operations Act 1997* (POEO Act).

The POEO Act provides generic regulatory instruments that can be applied to manage noise emission from a development site. Acoustic Dynamics advises that the operation of building services and other sources associated with the development not generate “*offensive noise*”, as defined within the Act:

**“offensive noise means noise—**

- (a) that, by reason of its level, nature, character or quality, or the time at which it is made, or any other circumstances:*
  - (i) is harmful to (or is likely to be harmful to) a person who is outside the premises from which it is emitted, or*
  - (ii) interferes unreasonably with (or is likely to interfere unreasonably with) the comfort or repose of a person who is outside the premises from which it is emitted, or*
- (b) that is of a level, nature, character or quality prescribed by the regulations or that is made at a time, or in other circumstances, prescribed by the regulations.”*

## 2.3 LIQUOR AND GAMING NSW

Prior to the *Liquor Act 2007* being gazetted by the NSW State Parliament, and establishment of the *Liquor Regulation 2008*, noise emission from licensed premises had to comply with the Liquor and Gaming NSW noise emission criteria (formerly NSW Office of Liquor and Gaming (OLG)), detailed below. Acoustic Dynamics advises that many NSW liquor licenses still specify the following noise emission criteria:

*“The  $L_{A10}$  noise emitted from the licensed premises shall not exceed the background noise level in any octave band frequency (31.5 Hz to 8 kHz inclusive) by more than 5 dB(A) between 7.00am and midnight at the boundary at any affected residence.*

*The  $L_{A10}$  noise level emitted from the licensed premises shall not exceed the background noise in any octave band centre frequency (31.5 Hz to 8 kHz inclusive) between midnight and 7.00am at the boundary of any affected residence.*

*Notwithstanding compliance of the above, noise from the licensed premises shall not be audible in any habitable room in any residential premises between the hours of midnight and 7.00am.”*

## 2.4 NSW ENVIRONMENT PROTECTION AUTHORITY

Acoustic Dynamics has reviewed various assessment guidelines and criteria published by the NSW Environment Protection Authority (EPA), including the following documents:

- *Noise Policy for Industry 2017 (NPfI)*; and
- *Road Noise Policy 2011 (RNP)*.

### 2.4.1 NOISE POLICY FOR INDUSTRY 2017

The NPfI outlines and establishes noise criteria for industrial and other noise sources in various zoning areas. The following criteria have been applied for the assessment of noise emission associated with the use and operation of the development.

#### PROJECT INTRUSIVENESS NOISE LEVEL

The intrusiveness noise level is determined as follows:

<b><math>L_{Aeq, 15min}</math> = rating background noise level + 5 dB</b>	
where:	
<b><math>L_{Aeq, 15min}</math></b>	represents the equivalent continuous (energy average) A-weighted sound pressure level of the source over 15 minutes.
and	
<b>Rating background noise level</b>	represents the background level to be used for assessment purposes, as determined by the method outlined in Fact Sheets A and B.

#### PROJECT AMENITY NOISE LEVEL

The recommended amenity noise levels represent the objective for **total** industrial noise at a receiver location, whereas the **project amenity noise level** represents the objective for a noise from a **single** industrial development at a receiver location.

To ensure industrial noise levels (existing plus new) remain within the recommended amenity noise levels for an area, a project amenity noise level applies for each new source of industrial noise as follows:

**Project amenity noise level for industrial developments = recommended amenity noise level (Table 2.2) minus 5 dB(A)**

Acoustic Dynamics advises that achieving compliance with the NPfI's noise emission objectives applicable at the boundaries of the nearest sensitive receivers will adequately protect the acoustic amenity of these receivers.



## 2.4.2 ROAD NOISE POLICY 2011

The RNP document provides road traffic noise criteria for proposed roads as well as other developments with the potential to have an impact in relation to traffic noise generation.

The noise criteria applicable to the subject site is presented below.

**Table 2.1 Road Traffic Noise Assessment Criteria for Residential Land Uses**

Road category	Type of project / land use	Assessment Criteria [dB]	
		Day (7am – 10pm)	Night (10pm – 7am)
Local roads	6. Existing residences affected by <b>additional traffic</b> on existing local roads generated by land use developments	L <sub>Aeq</sub> , (1 hour) 55 (external)	L <sub>Aeq</sub> , (1 hour) 50 (external)

## 3 NOISE MEASUREMENT EQUIPMENT AND STANDARDS

All measurements were conducted in general accordance with AS 1055.1:2018 *Acoustics – Description and Measurement of Environmental Noise Part 1: General Procedures*. Sound measurements were carried out using precision sound level meters conforming to the requirements of IEC 61672.1:2002 *Electroacoustics: Sound Level Meters – Part 1: Specifications*. The instrumentation used during the survey is set out in **Table 3.1**.

**Table 3.1 Noise Survey Instrumentation**

Type	Serial Number	Instrument Description
2270	2664115	Brüel & Kjaer Modular Precision Sound Level Meter
4189	2385698	Brüel & Kjaer 12.5 mm Prepolarised Condenser Microphone
4230	623588	Brüel & Kjaer Acoustic Calibrator

The reference sound pressure level was checked prior to and after the measurements using the acoustic calibrator and remained within acceptable limits.

## 4 ASSESSMENT METHODOLOGY

Acoustic modelling was undertaken using noise modelling software (*CadnaA Version 2023*) to predict operational noise levels generated by the development. CadnaA calculates environmental noise propagation according to the applicable international and ISO standards, including the ISO 9613 algorithm.

Within our calculations and acoustic modelling, noise emission contributions from the development have been considered taking the following factors into account:

- Airborne noise losses due to distance and ground topography;
- Losses due to direction and diffraction;
- Increases due to reflections; and
- Acoustic shielding.

### 4.1 PROJECT CRITERIA

To establish the acoustic environment at the subject site in accordance with the guidelines of the NSW EPA's NPfI, Acoustic Dynamics conducted attended background measurements onsite which are correlated with long-term noise logging data previously conducted in the local vicinity.

Acoustic Dynamics conducted measurements adjacent to the receivers along Mona Vale Road, on Tuesday 31 August 2021, between 10:00pm and 11:00pm. The noise environment was dominated by light vehicular traffic flow.

The attended measurements results are as follows:

- $L_{A90(15\text{minute})} = 35 \text{ dB}$ ; and
- $L_{Aeq(15\text{minute})} = 50 \text{ dB}$ .

**Note.** The attended background noise measurements were conducted on 31 August 2021, during the COVID-19 lockdown and due the reduced traffic flow and commercial activity, the measured background is considered to be atypical.

Further to the above information, Acoustic Dynamics conducted measurements adjacent to the receivers along Mona Vale Road, on Friday 29 July 2022, between 9:30pm and 9:50pm. The noise environment was dominated by moderate vehicular traffic flow.

The attended measurements results are as follows:

- $L_{A90(15\text{minute})} = 43 \text{ dB}$ ; and
- $L_{Aeq(15\text{minute})} = 69 \text{ dB}$ .

To ensure the noise emission objective is based on typical background noise levels for the area, Acoustic Dynamics has correlated the results of the attended measurements with noise logging data conducted at a site within close proximity (i.e. a residential site located 220 metres to the south west of the RSL).

Following the general procedures outlined in the EPA's NPfI, a summary of the established noise environment, is presented in **Table 4.1**.

**Table 4.1 Measured Noise Levels and Project Noise Objectives – External Receivers**

Location	Assessment Period	L <sub>A90</sub> Rating Background Noise Level (RBL) [dB]	Measured L <sub>Aeq</sub> [dB]	Project Intrusiveness Noise Level L <sub>Aeq</sub> [dB]	Project Amenity Noise Level L <sub>Aeq</sub> [dB] <sup>2</sup>	Project Noise Trigger Level L <sub>Aeq</sub> [dB]
Nearest Residential Receiver(s)	Day (7am to 6pm)	48	61	53	58	<b>53</b>
	Evening (6pm to 10pm)	38	54	43	48	<b>48</b>
	Night (10pm to 7am) <sup>1</sup>	35	54	40	43	<b>40</b>

Note: 1) Night time being 10:00pm to 7:00am on Sundays and public holidays.

2) Amenity adjustment based on "Suburban" receiver type. The noise emission objective has been modified in accordance with the recommendations detailed within the NPfI Section 2.2, for time period standardising of the intrusiveness and amenity noise levels (L<sub>Aeq,15min</sub> will be taken to be equal to the L<sub>Aeq, period</sub> + 3 decibels (dB).

Based on the background noise measurements conducted on site and previous long-term and short-term measurements conducted in similar types of areas, Acoustic Dynamics has applied the following suburban background noise spectrums for the assessment of venue-based music and patron noise impacts during the operating hours:

**Table 4.2 Suburban Background Noise Spectrum and LG Criteria**

Time Period	Descriptor	Octave Band Frequency (Hz) [dB(A)]									dB(A)
		31.5	63	125	250	500	1k	2k	4k	8k	
Day/evening 6pm to 10pm <sup>1</sup>	L <sub>90</sub> Spectrum	10	22	28	30	35	33	29	20	12	38
	<b>Criteria (L<sub>90</sub> + 5)</b>	<b>15</b>	<b>27</b>	<b>33</b>	<b>35</b>	<b>40</b>	<b>38</b>	<b>34</b>	<b>25</b>	<b>17</b>	<b>43</b>
Night (10pm to midnight)	L <sub>90</sub> Spectrum	6	19	25	29	31	29	24	18	12	35
	<b>Criteria (L<sub>90</sub> + 5)</b>	<b>11</b>	<b>24</b>	<b>30</b>	<b>34</b>	<b>36</b>	<b>34</b>	<b>29</b>	<b>23</b>	<b>17</b>	<b>40</b>

Note. 1) Acoustic Dynamics has adopted a more conservative 6pm to 10pm spectrum to remove the influence of the typically higher background noise levels during the daytime.

## 4.2 MODELLING ASSUMPTIONS

To assist our assessment, Acoustic Dynamics attended the Willis Recreation and Sport Centre (WRSC) on Wednesday 13 March 2024 and undertook operator-attended noise measurements during the operation of various lessons and matches around the perimeter of the four (4) pickleball courts.

At this time, Acoustic Dynamics noted the following:

- All four (4) courts were split into two (2) separate areas by a net;
- Two (2) courts were in use with a total ten (10) players and two (2) coaches playing two (2) individual matches;
- Four (4) players were participating in a lesson with one (1) coach on one (1) court;
- The remaining court was not in use; and
- Players participating in matches would typically play for 10 minutes and then rest for 5 minutes.

Based on our observations of the various activities, the following assumptions were made regarding the pickleball matches to be held at the proposed site:

1. Matches will be running on all six (6) courts simultaneously;
2. Four (4) players will participate on each court, with up to three (3) players / substitutes on the sideline of each court;
3. Quarters will run on each court simultaneously and continuously for 15 minutes (even though at least one break is predicted to occur within a 15-minute period);
4. No additional mechanical plant is proposed to service the new pickleball courts;
5. A maximum of 80 player vehicles will enter or exit the car park within any 60-minute period, utilising available car spaces to park on-site, which is considered to be negligible in comparison to the level of noise emission from the pickleball courts; and
6. A maximum of 42 vehicle pass-bys will occur in front of any one nearby residence within a 1-hour period.

Further to our investigations at the WRSC, Acoustic Dynamics has established and assessed the following noise levels resulting from the operation of the proposed pickleball courts.

Measurements were undertaken from a number of positions around the courts at WRSC whilst three out of the four courts were in use, and did not vary significantly around the perimeter of the courts.

The following average  $L_{Aeq(15 \text{ min})}$  octave band noise levels were measured and are representative of the noise levels experienced from the operation of three courts, measured 1 metre from the perimeter at the centre court, in an open air environment. Measurements include instantaneous ball impact noise, short vocal efforts from players, and intermittent discussions between players on the sideline.

**Table 4.3 Measured  $L_{Aeq(15 \text{ min})}$  Spectrum of Three Pickleball Courts**

Source	Descriptor	Octave Band Frequency (Hz) [dB(A)]									dB(A)
		32	63	125	250	500	1k	2k	4k	8k	
Three pickleball courts, open air	$L_{Aeq(15 \text{ min})}$ Spectrum at 1 m from courts	25	39	41	47	57	62	57	51	44	<b>65</b>

To assess the impact of noise resulting from the operations of the proposed six pickleball courts, Acoustic Dynamics has established the following sound level at any point 1 metre from the northern boundary of the existing upper car park level.

**Table 4.4 Predicted  $L_{Aeq(15 \text{ min})}$  Internal Reverberant Spectrum of Six Pickleball Courts**

Source	Descriptor	Octave Band Frequency (Hz) [dB(A)]									dB(A)
		32	63	125	250	500	1k	2k	4k	8k	
Six pickleball courts	$L_{Aeq(15 \text{ min})}$ Spectrum	28	42	44	50	60	65	60	54	47	<b>68</b>

Note: 1) Acoustic Dynamics assumes noise is emitted as a line source around the perimeters of the upper ground level car park.

### 4.3 NEAREST RECEIVERS

The cumulative noise impact has been assessed to the potentially most affected point at the adjacent sensitive receiver properties and presented below.

**Table 4.5 Nearest Sensitive Receiver Locations**

Source	Location	Direction
<b>Residential Receivers</b>		
<b>R<sub>1</sub></b>	87-91 Mona Vale Road	North

Acoustic Dynamics advises that by achieving compliance with the nearest sensitive receiver locations, compliance will also be achieved at all other sensitive receiver locations further away.

## 5 OPERATIONAL NOISE EMISSION ASSESSMENT

The calculated maximum noise emission levels at the nearest receiver locations against the relevant criteria are presented below. It is advised that by achieving compliance with the nearest sensitive receiver locations, compliance will also be achieved at all other receiver locations.

### 5.1 EXTERNAL NOISE EMISSION LEVELS

The assessment location for **external noise emission** is defined as the most affected point on or within any sensitive receiver property boundary. Examples of this location may be:

- 1.5m above ground level;
- On a balcony at 1.5m above floor level; and
- Outside a window on the ground or higher floors, at a height of 300mm below the head of the window.

Acoustic Dynamics advises the calculated **external** noise emission levels are conservatively based on **maximum capacity** operations at the development during the quietest operating hours. Acoustic Dynamics advises that such a scenario is unlikely to occur and noise levels are likely to be below those calculated for the majority of the time.

**Table 5.1 Calculated External Noise Emission Levels at Residential Receivers**

Receiver	Noise Source <sup>1</sup>	Relevant L <sub>A10</sub> Noise Emission Criterion [dB] and Calculated L <sub>A10</sub> Noise Emission Levels at Receivers [dB] <sup>3,4</sup>										Complies?
		32	63	125	250	500	1K	2K	4K	8K	O/A	
Evening Criterion (6:00pm to 10:00pm)		15	27	33	35	40	38	34	25	17	43	
R <sub>1</sub>	Existing Operations <sup>2</sup>	2	4	19	24	32	33	29	21	13	38	
	Pickleball Matches	6	19	21	26	34	37	29	20	10	39	
	Cumulative Total	7	19	23	28	36	38	32	23	15	41	Yes

Note: 1) Operations and noise sources detailed in **Section 4**.

2) Existing sound levels taken from our measurements and predicted noise emission levels submitted in our approved Acoustic Report for the addition of the car park dining area.

3) Acoustic Dynamics assumes noise sources will operate continuously over the assessment period.

4) Includes the benefits of recommendations outlined in **Section 7**.

## 5.2 ROAD TRAFFIC NOISE LEVELS

Acoustic Dynamics understands that players who drive will access the courts via surrounding local roads. Vehicles utilising local roads are assessed in consideration of the RNP criteria outlined in **Section 2**.

The calculated maximum noise emission levels at the nearest residential receivers, due to the vehicles utilising surrounding local roads, are presented below. Acoustic Dynamics advises that by achieving compliance with the nearest sensitive receiver locations, compliance will also be achieved at all other sensitive receiver locations further away.

**Table 5.2 Calculated Road Traffic Noise Emission Levels & Relevant Noise Criteria**

Receiver	Predicted Maximum $L_{eq,1hr}$ Sound Pressure Level [dB] <sup>1</sup>	Relevant $L_{Aeq,1hr}$ Criterion [dB] <sup>2,3</sup>	Complies?
Nearest Residential Receivers	45	50	Yes

Note: 1) Predicted  $L_{Aeq}$  noise level is the maximum noise level measured within a 1-hour period.  
 2) Measured noise level within a 1-hour period during the day-time assessment period (7:00am until 10:00pm).  
 3) Compliance with this most sensitive assessment period criterion ensures compliance during all other less stringent assessment periods.

## 6 DISCUSSION

Our predicted cumulative levels of existing and additional noise from the proposal indicate the following:

1. Noise emission resulting from the cumulative use and operations of the RSL club (**including** the existing operations of the club and outdoor dining area) is **predicted to comply** with the relevant **external** noise emission criteria of Northern Beaches Council, NSW policies and legislation, Liquor and Gaming NSW, the NSW EPA, AAAC Guidelines and Australian Standards during all proposed hours of operation when assessed at the nearest sensitive receivers;
2. Noise emission associated with additional traffic on surrounding local roads is **predicted to comply** with the NSW EPA's RNP when assessed at the nearest sensitive receivers;
3. There is **low risk** of acoustic disturbance to the nearest sensitive residential, commercial and industrial receivers during the proposed hours of operation;
4. To ensure the assessment is conducted in a conservative manner, noise emission has been assessed as a **worst-case** scenario (i.e. all noise generating activities and noise sources

occurring simultaneously and at maximum capacity). Generally, noise emission associated with the operation of the facility is **predicted to be lower** than the calculations presented; and

5. The noise calculations and operational assumptions should not be considered prescriptive. They are modelling assumptions that have been used to demonstrate typical noise sources and operations associated with the facility **can be designed to achieve compliance** with the relevant criteria.

## 7 RECOMMENDATIONS AND DESIGN ADVICE

The following recommendations are provided to ensure noise associated with the proposal is adequately managed and minimised.

### 7.1 NOISE MANAGEMENT PLAN

Acoustic Dynamics recommends the adoption of a Plan of Management (PoM) incorporating best management practice procedures to protect the acoustic amenity of the surrounding area.

A copy of the PoM shall be maintained by the Manager/Licensee and accessible to all senior management staff. All site staff shall be briefed on the relevant sections of the PoM during their induction to the company, including the explanation of noise and vibration control and a discussion of the specific noise reduction strategies. It shall be the duty of the Manager/Licensee to ensure all operational management strategies and procedures are complied with.

The PoM shall outline policies and procedures to ensure noise emission from the pickleball courts are kept to a minimum, including:

1. The number of players per court shall not exceed four (4) participating players, and up to three (3) players on each sideline at any moment on time;
2. Patron entry to and exit from the pickleball courts shall be permitted from the ingress and egress points currently approved;
3. At the cessation of matches (9:00pm), ensure players leave the premises quietly and respectfully to minimise any potential impacts on the surrounding amenity, including **signage** reminding staff and players to be aware of their neighbours and to leave in a respectful manner; and
4. Implementation of an appropriate community liaison procedure, including a noise and vibration complaint procedure and means of ongoing communication with nearby potentially affected receivers once development operations begin.



## 7.2 ACOUSTIC BARRIER

Acoustic Dynamics advises an acoustic barrier extending **2500 mm** above the upper car park ground level and the **full length** of the northern perimeter of the pickleball courts (the existing locations marked on the plans in **Appendix A**) is required to sufficiently attenuate noise transmission from the development to the nearest receivers. The effectiveness of an acoustic barrier is determined by its height, constructed materials and density.

The acoustic barrier must meet the following specifications:

1. The acoustic barrier must provide a minimum surface density of **15 kg/m<sup>2</sup>** and contain **no gaps** along the surface. All gaps are to be adequately sealed using a flexible mastic sealant. Acoustic Dynamics advises that the acoustic barrier could be constructed to be:
  - A double layer Colorbond™ (or equivalent) construction;
  - Masonry (brick or concrete) construction;
  - A minimum 9mm thick compressed fibre-cement sheeting on a timber or steel stud; or
  - Other suitable material (minimum surface density of **15 kg/m<sup>2</sup>**) such as Perspex or equivalent;
2. The acoustic barrier must extend 2500 mm above the upper ground level of the car park and extend the **full length** of the northern boundary (as marked on the plans in **Appendix A**) of the pickleball courts. Acoustic Dynamics advises the upper area of the barrier may be constructed to be Perspex™; and
3. The non-transparent (lower) areas of the acoustic barrier must be lined internally with a suitably weather resistant and durable outdoor acoustic absorption material (such as Stratocell Whisper™ or Megisorber FM50™).

## 7.3 MECHANICAL SERVICES

Acoustic Dynamics understands no additional mechanical plant is proposed. Should mechanical services be proposed at a later stage, Acoustic Dynamics recommends that a full **mechanical noise emission assessment** be completed by an appropriately qualified acoustical consultant.

## 7.4 BUILDING MATERIAL CERTIFICATION

Acoustic Dynamics advises that all building materials specified must be tested and certified by a locally recognised and accepted testing agency in respect of their intended use. Where appropriate, materials and noise mitigation measures specified by Acoustic Dynamics must be certified by a locally recognised and qualified professional for suitability (structural, wind loading, or other) for the intended use.

## 8 CONCLUSION

Acoustic Dynamics has assessed noise emission and environmental noise impacts associated with the operations of the proposed pickleball courts to be located at the Pittwater RSL Club, Mona Vale, NSW.

A review of the applicable local council, state government, federal legislation and international standards was conducted. Noise levels were assessed in accordance with the requirements of:

- (a) Northern Beaches Council;
- (b) Liquor and Gaming NSW;
- (c) NSW Environment Protection Authority;
- (d) Association of Australasian Acoustical Consultants; and
- (e) Australian Standards.

The relevant assessment criteria, standards, and instrumentation used in this assessment are presented in **Section 2** and **Section 3**. Our assessment methodology, calculations and results are presented in **Section 4** and **Section 5**, and a discussion of the results in **Section 6**. Recommendations and advice for acoustic design measures and noise management strategies are provided in **Section 7**.

### **Acoustic Opinion**

**Further to our site survey, noise monitoring and measurements, our review of the relevant acoustic criteria and requirements, and our calculations, Acoustic Dynamics advises that the proposal can be designed to comply with the relevant acoustic criteria of Northern Beaches Council, the NSW OLG, NSW EPA, POEO Act 1997 and international standards, with the incorporation of our recommendations detailed within this report.**

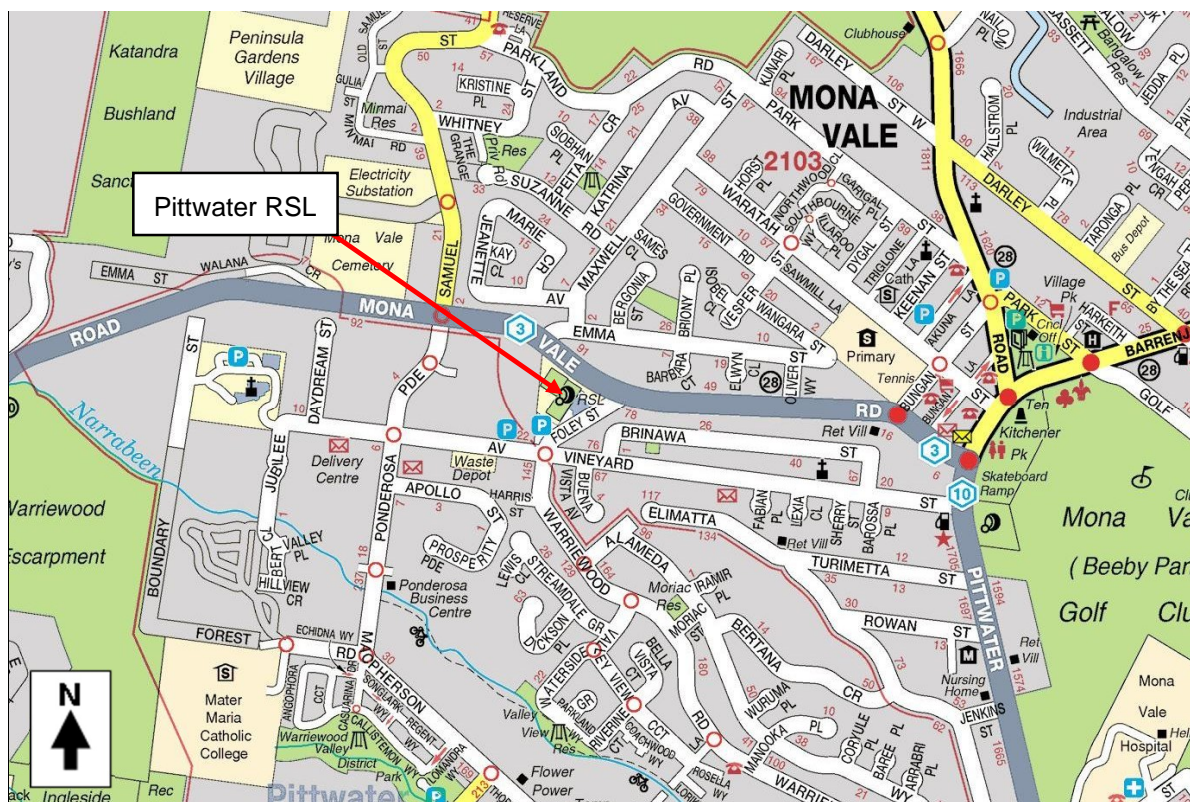
**It is our opinion that the acoustic risks associated with the proposal can be adequately controlled and the amenity of neighbouring properties and residents can be satisfactorily protected.**

We trust that the above information meets with your present requirements and expectations. Please do not hesitate to contact us on 02 9908 1270 should you require more information.



## APPENDIX A – LOCATION MAP, AERIAL IMAGE, DRAWINGS & PHOTOGRAPH

### A.1 LOCATION MAP



### A.2 AERIAL IMAGE (COURTESY OF SIXMAPS)







## A.3.3 ELEVATION AND ACOUSTIC BARRIER MARK-UPS

